CLAIMS

1. In a wireless communication system, a method for transmitting data bits associated with an adaptive multi-rate (AMR) speech coder, comprising:

receiving a plurality of data bits associated with the AMR speech coder;

generating a plurality of frame quality indicator bits for the plurality of data bits;

forming a formatted frame having included therein the plurality of data bits and the plurality of frame quality indicator bits and conforming to a particular frame format defined by the communication system; and

transmitting a representation of the formatted frame.

2. The method of claim 1, further comprising:

encoding the formatted frame with a particular encoder to generate an encoded frame.

3. The method of claim 2, further comprising:

rate matching the encoded frame in accordance with a particular rate matching algorithm.

4. The method of claim 1, wherein the plurality of frame quality indicator bits comprise a plurality of cyclic redundancy check (CRC) bits.

5. The method of claim 4, wherein the plurality of frame quality indicator bits comprise an 8-bit CRC value or a 12-bit CRC value.

6. The method of claim 1, wherein the formatted frame is associated with one of a plurality of possible frame rates.

7. The method of claim 6, wherein the plurality of possible frame rates includes four frame rates used for speech information, one frame rate used for a silence descriptor (SID), and one frame rate used for a blank frame.

8. The method of claim 2, wherein the plurality of data bits are representative of speech information.

9. The method of claim 8, wherein the plurality of data bits are associated with one of a plurality of possible data rates.

10. The method of claim 9, wherein the formatted frame for each possible data rate include a particular number of data bits, which is different from the number of data bits in formatted frames for other possible data rates.

11. The method of claim 8, wherein the plurality of data bits includes bits from a plurality of classes, and wherein each class is associated with a respective level of importance.

12. The method of claim 11, wherein the generating and encoding are performed on the plurality of classes of bits in the formatted frame.

13. The method of claim 11, wherein the plurality of classes of bits are allocated respective sections of the formatted frame.

14. The method of claim 8, wherein the formatted frame with speech information includes at least 12 frame quality indicator bits.

15. The method of claim 2, wherein the plurality of data bits are representative of a silence descriptor (SID).

16. The method of claim 15, wherein the SID is one of a plurality of SID types.

17. The method of claim 16, wherein the SID for each SID type includes a particular number of bits that is different from the SIDs for other SID types.

18. The method of claim 16, further comprising:

appending, in the formatted frame, one or more format bits indicative of a particular SID type of the SID included in the formatted frame.

19. The method of claim 18, wherein formatted frames for the plurality of SID types have same frame length.

20. The method of claim 19, wherein the frame length for the plurality of SID types is 43 bits or 46 bits.

21. The method of claim 15, wherein the formatted frame for the SID includes at least 8 frame quality indicator bits.

22. The method of claim 1, further comprising:
transmitting signaling information associated with AMR data via a signaling channel.

23. The method of claim 1, further comprising:
transmitting signaling information associated with AMR data in a signaling frame on a traffic channel used to transmit the formatted frame.

24. The method of claim 1, wherein the wireless communication system conforms to the cdma2000 standard.

25. A method for receiving data bits associated with an adaptive multi-rate (AMR) speech coder, comprising:
receiving a frame having included therein a plurality of data bits associated with the AMR speech coder;
detecting a frame rate of the received frame; and
extracting the plurality of data bits from the received frame based at least in part on the detected frame rate.

26. The method of claim 25, further comprising:
decoding the received frame in accordance with a plurality of rate hypotheses to generate a plurality of decoded frames.

27. The method of claim 26, wherein the frame rate of the received frame is detected based on results of a CRC check on the plurality of decoded frames.

28. The method of claim 27, wherein the frame rate of the received frame is further detected based on symbol error rates for the plurality of decoded frames.

29. The method of claim 25, wherein the received frame is associated with one of a plurality of possible frame rates, and wherein the detecting is performed in accordance with a rate detection algorithm (RDA).

30. The method of claim 29, wherein the plurality of possible frame rates include four frame rates used for speech information, one frame rate used for a silence descriptor (SID), and one frame rate used for a blank frame.

31. In a wireless communication systems, a transmitting entity operative to transmit data bits associated with an adaptive multi-rate (AMR) speech coder, comprising:

a frame quality generator configured to process a plurality of data bits associated with the AMR speech coder to generate a plurality of frame quality indicator bits;

a frame formatter coupled to the frame quality generator and configured to form a formatted frame having included therein the plurality of data bits and the plurality of frame quality indicator bits and conforming to a particular frame format defined by the communication system; and

a transmitter unit configured to transmit a representation of the formatted frame.

32. The transmitting entity of claim 31, further comprising:

a convolutional encoder coupled to the frame formatter and configured to encode the formatted frame to generate an encoded frame.

33. In a wireless communication systems, a receiving entity operative to receive data bits associated with an adaptive multi-rate (AMR) speech coder, comprising:

a decoder configured to receive a frame having included therein a plurality of data bits associated with the AMR speech coder, decode the received frame in accordance with a plurality of rate hypotheses, and provide a plurality of decoded frames for the plurality of rate hypotheses, wherein each rate hypothesis correspond to one of a plurality of possible frame rates for the received frame; and

a rate detector coupled to the decoder and configured to receive at least one set of quality indicator values, determine a particular frame rate for the received frame based on the at least one set of quality indicator values, and extract the plurality of data bits from the received frame based at least in part on the determined frame rate.

34. The receiving entity of claim 33, wherein the rate detector includes

a CRC checker configured to check the plurality of decoded frames based on a set of CRC bits included each decoded frame, and to provide a plurality of check bits indicative of results of the CRC check for the plurality of decoded frames.

35. The receiving entity of claim 33, wherein the rate detector includes

a symbol error rate (SER) detector configured to provide a plurality of SER values for the plurality of decoded frames.

36. The receiving entity of claim 33, wherein the rate detector includes a Yamamoto detector configured to provide a plurality of Yamamoto values for the plurality of decoded frames.

37. The receiving entity of claim 33, wherein the frame rate of the received frame is determined based on results of CRC check, symbol error rates, Yamamoto values, or a combination thereof, obtained for the plurality of decoded frames.

38. A method for sending adaptive multi-rate (AMR) speech coder information in a cdma2000 system, comprising:

encoding bits of the AMR speech coder information using a cyclic redundancy check (CRC);

inserting the AMR speech coder information into a cdma2000 frame having a frame rate selected from a particular number of possible frame rates; and

transmitting a representation of the cdma2000 frame.

39. A method of receiving adaptive multi-rate (AMR) speech coder information in a cdma2000 system, comprising:

performing rate detection on a received cdma2000 frame to determine a frame rate of the received frame; and

extracting a plurality of AMR information bits from the received frame based at least in part on the determined frame rate of the received frame.

40. The method of claim 2, wherein the particular encoder is a convolutional encoder.

41. The method of claim 2, wherein the formatted frame includes a plurality of tail bits used to set the convolutional encoder to a known state at the start of each frame.

42. The method of claim 9, further comprising:

omitting, from the formatted frame, format bits indicative of a particular data rate of the speech information included in the formatted frame.

43. The method of claim 1, further comprising:

omitting from the formatted frame signaling information associated with AMR data.

44. The method of claim 38, further comprising:

encoding the AMR speech coder information according to a tailed-off convolutional code.

45. The method of claim 38, wherein the bits of the AMR speech coder information fall into a particular number of priority classes corresponding to different levels of importance.

46. The method of claim 45, wherein the particular number of priority classes is three.

47. The method of claim 38, wherein the particular number of possible frame rates is six.

48. The method of claim 47, wherein the six possible frame rates includes four frame rates used to carry primary service option data, one frame rate used to carry silence descriptor (SID) data, and one frame rate used to carry no data.

49. The method of claim 48, further comprising:

inserting one or more format bits in each frame carrying SID data to form a frame having a particular number of total bits.

50. The method of claim 49, wherein a frame carrying SID data includes 43 total bits.

51. The method of claim 38, further comprising:
sending signaling information on a cdma2000 dedicated control channel (DCCH) channel.

52. The method of claim 38, further comprising:
sending signaling information using blank-and-burst frames on a cdma2000 fundamental channel.

53. The method of claim 39, further comprising:
selecting a frame rate for the received frame from among a particular number of possible frame rates based on a blind rate determination algorithm.

54. The method of claim 53, wherein the particular number of possible frame rates is six.

55. The method of claim 54, wherein the six possible frame rates includes four frame rates used to carry primary service option data, one frame rate used to carry silence descriptor (SID) data, and one frame rate used to carry no data.

56. The method of claim 39, further comprising:
receiving on a cdma2000 dedicated control channel (DCCH) channel signaling information associated with a traffic channel carrying the AMR speech coder information.

57. The method of claim 39, further comprising:
receiving signaling information associated with a fundamental channel carrying the AMR speech coder information within blank-and-burst frames received in the fundamental channel.